Abstract Submitted
for the 4CF07 Meeting of
The American Physical Society

**Mapping of GeSbTe Thin Film Electrical Properties with Conductive AFM** JORDAN BROCIOUS, COLIN INGLEFIELD, Weber State University, DAVID BOBELA, THOMAS HERRING, University of Utah, P. CRAIG TAYLOR, Colorado School of Mines — The phase-change material system GeSbTe (GST) is currently used for optical data storage, however many details of the mechanism governing the phase change are not understood. GST's optical properties and electrical conductivities differ between the amorphous and crystalline phases. For instance, the electrical conductivity in the amorphous phase can be $\sim 10^3$ times smaller than electrical conductivity in the crystalline phase. Thin films of $Ge_2Sb_2Te_5$ and other alloys were created by a RF sputtering technique, which is known to produce amorphous samples. Crystalline regions were created after growth by localized laser heating. We characterized these films with Conductive Atomic Force Microscopy, which provides physical and electrical topography images. From this characterization we have identified sparse $\sim$100 nm highly conductive regions in the overall low-conductivity amorphous material. Although the laser treatment does not result in a uniformly conductive film, conductive regions in the treated material are significantly denser and larger.

Colin Inglefield
Weber State University

Date submitted: 14 Sep 2007 Electronic form version 1.4